

Appl. Ser. No. 10/817,217
Reply to the Office Action mailed 19 February 2008
Reply filed 18 April 2008

REMARKS

In response to the Office Action of February 19, 2008, Applicant submits this reply. In view of the preceding amendments and following remarks, reconsideration of the objections and rejection is requested.

Claim 7 remains the sole claim pending in this application. No fee is due for claims for this reply.

Objections to the Specification

The specification was objected to on the grounds of two asserted informalities, one related to A₀ and the other related to an erroneous appearance of the article "no."

With regard to the former objection, paragraph [0010] has been amended to fix the typographical error.

With regard to the latter objection, paragraph [0047] has been amended to delete the erroneous appearance of "no" as suggested in the Action. Applicant thanks the Examiner for noting this error.

Claim Rejection under 35 U.S.C. §112 par. 1

Claim 7 was rejected under 35 U.S.C. §112, par. 1, as failing to comply with the written description requirement.

Claim 7 has been amended to clarify the meaning of the terms "nonzero value" and "zero value", to comport with the disclosure of the specification. In light of these amendments, reconsideration and withdrawal of this ground for rejection is respectfully requested.

Claim Rejection under 35 U.S.C. §103

Claim 7 was rejected under .S.C. §103(a) as being unpatentable over Sharp Lab of America et al., WO 98/35500 (Sharp) in view of Miyasaka et al., US 6,484,142 (Miyasaka), and further in view of Chen et al., US 7,212,681 (Chen.) The rejection is respectfully traversed.

The Action asserts that Sharp discloses almost all of the limitations of claim 7, including inherently, the type of coding, and further including, with reference to page 14 "Frame-Based

Appl. Ser. No. 10/817,217
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Quantizater Control", that "weight, variance and bits are used in determining the quantization values...[and] are all scale factors." The Action recognizes that Sharp fails to disclose the recited entropy encoding limitations, but that Miyasaka discloses all of the entropy encoding limitations, except the limitations *nonzero value not preceded by a zero value...and if each nonzero value proceeded by a zero value*, which the Action asserts is disclosed by Chen.

At a minimum, the cited references fail to disclose, either alone or in combination:

- (A) *for each nonzero amplitude coefficient not preceded by a run of zero valued coefficients and in the index range, determining an index and encoding the nonzero amplitude coefficient using a code word from a second set of code words, followed by the index* (emphasis added); and
- (B) *for each nonzero amplitude coefficient preceded by a run of zero valued coefficients and in the base range, encoding the nonzero amplitude coefficient using a code word from a third set of code words and encoding the run of zero valued coefficients using a code word from a fifth set of code words and after the code word for the nonzero amplitude coefficient; and*

for each nonzero amplitude coefficient preceded by a run of zero valued coefficients and in the index range, determining an index and encoding the nonzero amplitude coefficient using a code word from a fourth set of code words, followed by the index and encoding the run of zero valued coefficients using a code word from the fifth set of code words and after the code word for the nonzero amplitude coefficient.

With regard to (A), the Action does not cite to any passage in any of the cited references that discloses encoding the index **in the bit stream**, as recited in amended claim 7, i.e., *encoding...followed by the index* (See par. [0056], index P.)

Miyasaka, which relates to MPEG-AAC audio coding, is directed to an improvement to the standardized approach of selecting Huffman code tables for each scale factor band (SFB), a group of four frequency coefficients. Miyasaka attempts to optimize that selection not only based on how long the coded data of the SFB with each Huffman table will be, but also on how many bits are required to encode which Huffman tables were selected, and also how many bits are required to encode sign bits when the unsigned Huffman codebooks are selected. AAC encodes the table selection differently if consecutive SFBs use the same table. (col 17, line 30 and col 18,

Appl. Ser. No. 10/817,217
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lines 28-38). The selection of candidate Huffman code tables depends on the LAV (Largest Value) that must be coded in the SFB. Each SFB (four coefficients) is encoded with two codewords. For each SFB two indices are calculated based on the data values in the SFB. These are referred to as index0 and index1 and correspond to the two codewords. The two indices are used to look up the code length of the two codewords in each of the candidate Huffman tables. The code word lengths that correspond to index0 and index1 for a particular Huffman table are added together. The code words for index0 and index1 from the selected Huffman table are concatenated together to encode the 4 coefficients in the SFB. (4 coeffs → 2 codes). In addition, bits are added to specify which Huffman table was used and to specify sign bits if one of the unsigned tables were used.

Stated again, Miyakasa presents one way to select among a set of Huffman tables. Miyasaka's disclosed technique is designed to optimize code length only for the way that MPEG-AAC audio encodes the code table selection along with the data. Miyasaka's two index values are used to look up the two lengths of the codes that would be generated if alternative Huffman tables were used to encode the data. A selection of a preferred table is made based (in part) on those lengths. In essence, Miyasaka compares multiple ways to encode the same information and then selects one. Miyasaka fails to disclose either of the limitations recited in (A) and (B) above. Miyasaka codes four coefficients using two code words. Miyasaka's two indices, index0, and index1, correspond to the two code words, not to different parts of the same code word. In contrast, the presently claimed invention does not involve selecting among tables based on a calculated code length. Rather, selection among tables is based upon *nonzero amplitude coefficients* and whether they are *preceded by a run of zero valued coefficients*.

The Action cites Chen in support of the assertion that Chen discloses the limitations *nonzero value not preceded by a zero value...and if each nonzero value proceeded by a zero value*.

First, Chen is not proper 103(a) prior art. Applicant has submitted herewith a Rule 131 declaration from co-inventor Kottke and supporting documentation evidencing conception and due diligence prior to the effective date of the Chen reference.

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APR 18 2008

Appl. Ser. No. 10/817,217
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Secondly, Chen fails to disclose the limitations (A) and (B) noted above that are absent from Sharp or Miyaska. As recited in (B), the presently claimed invention involves the use of multiple code words (see 408 and 412 of Figure 4 and associated text.) to represent the occurrence of *zero valued coefficient runs preceding non-zero valued coefficients*. The *entropy encoding* technique recited in amended claim 7 does not fall into either 2D-VLC or 3D-VLC coding disclosed by Chen, since the combination of a run of preceding zero-amplitude coefficients is not considered to be a single event. Rather it is considered to be two events, and the events are encoded by two code words, each taken from a different codeword table. One table holds amplitude code words, the other table holds zero run code words. Unlike the recited *entropy encoding* technique, wherein separate codes words are used for *nonzero amplitude coefficients* and *runs of zero valued coefficients*, Chen's disclosed method involves combining the coding of zero runs with the coding of sets of predefined sequences into a single code table. Chen does not represent these combinations with two code words; rather, the combinations are represented by a single code word.

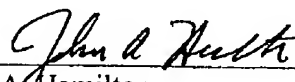
Conclusion

In view of the foregoing claims cancellations and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this reply, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

Please charge any fee, or credit any overpayment, to **Deposit Account No. 50-0876**.

Respectfully submitted,

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